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The improvement of the model testing for the earthquake forecasting models

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When there are some earthquake forecasting models, we need to evaluate them. For the evaluation methods, L-, N-, M-, S- and R-tests based on the Poisson distribution are often used in the Coordinating Committee for Earthquake Prediction (CCEP). However, there are several problems for the L-test. For example, the score on the L-test is often better even if the score on the N-test and S-test are very bad. It may be caused by the shape of the likelihood of the Poisson distribution. The mode of a Poisson distribution with the expectation is the maximum integer not greater than the expectation. Therefore, the difference of the sum of expectations and the sum of observations become large in the L-test that verifies many regions at same time.

So, we show the problem of L-test by the numerical simulation and suggest some improvement methods.

Keywords: earthquake, forecasting model, test